REMARKS

In the outstanding Office Action, Claims 1-19 and 30-37 were withdrawn from consideration. Claims 1-19 and 30-37 have been canceled.

All of the claims were rejected on the basis of obviousness. Claims 20 and 22-29 were rejected as obvious over United States Patent No. 5,882,475 to *Vikio et al.*, while Claim 21 was rejected as obvious over *Vikio* '475 in further view of *Maxham* or *Markham et al.*, respectively United States Patent Nos. 4,983,258 and 5,234,543. Claims 20-29 were also rejected on the basis of obviousness-type double patenting over United States Patent No. 6,416,622 to *de Jong* which issued on the United States Patent Application parent to this application.

Applicant submits herewith a *Terminal Disclaimer* which is believed to overcome the obviousness-type double patenting rejection. Withdrawal of that rejection is believed warranted.

Withdrawal of the rejections based in whole or in part on *Vikio et al.* '475 is also requested based on the enclosed *Declaration* and following remarks. The *Vikio et al.* '475 reference does not disclose, teach or suggest to treat a rejects stream to selectively remove hydrophobic waste with flotation and feed that treated stream forward in the system. The results are unexepectedly superior in any event as is discussed in more detail below and in the accompanying *Declaration of Robert de Jong*.

The invention, as claimed in Claims 20-29 and new Claims 38-41 is directed to a hybrid cleaning system wherein the rejects stream of a bank of forward cleaners is treated with flotation, processed again in a second stage centrifugal cleaner and the accepts combined with the accepts from a first stage. The claims method improved pulp brightness, reduces stickies and dirt content and reduces ink concentration dramatically. Claim 20 has been amended to explicitly recite that selective removal of hydrophobic waste from a cleaner rejects stream is required by the inventive process and that the purified stream is fed forward to a second stage cleaner:

20. A method of processing papermaking fibers with a multistage array of forward cleaners including a plurality of centrifugal cleaners configured to generate accepts streams and rejects streams which concentrate hydrophoboic contaminants, said method comprising:

(a) feeding a first aqueous feed stream including papermaking fibers to a first stage bank of centrifugal cleaners of said multistage array;

(b) generating a first accepts aqueous stream and a first rejects aqueous stream in said first stage bank of centrifugal cleaners, said first aqueous rejects stream being enriched in heavy hydrophobic contaminants with respect to said first aqueous feed stream;

(c) supplying said first rejects aqueous stream to a flotation stage;

(d) treating said first rejects aqueous stream in said flotation stage to selectively remove hydrophobic waste from said first aqueous rejects stream and produce an intermediate aqueous purified feed stream;

(e) feeding said aqueous purified intermediate feed stream forward to a second stage bank of centrifugal cleaners of said multistage array, said second centrifugal cleaner being configured to generate a second accepts aqueous stream; and

(f) combining said first accepts aqueous stream with said second accepts aqueous stream to form a combined accepts stream.

Support for the amendments to Claim 20 are found at page 3 of the specification, line 15 and following as well as on page 5 of the application as filed, first and second paragraphs. See also, page 9, first full paragraph. Support for new Claims 38-41 is found in Tables 9, 10, 11 in the application as filed as well as in **Figure 7** and the accompanying text, discussed further herein. Advantages of the invention include less fiber loss and better efficiency as is noted on page 5, line 10 through page 6, line 9 of the application as filed:

> One advantage of feeding the second accepts stream forward is that it does not have to be returned to the first bank of cleaners for re-cleaning. This reduces the size of the first bank of cleaners or allows an existing installation to operate at a lower consistency. (The cleaners operate more efficiently at a low consistency of 0.5% than at 0.8 or 1%). Another advantage is that the flotation cell typically operates at greater than 60% efficiency on removing hydrophobic contaminants from the first cleaner rejects, while another cleaner stage removes less than 50% of the hydrophobic contaminants. As a result a large quantity of hydrophobic

contaminants are removed in the flotation stage, which makes the remaining cleaner stages work more efficiently with less good fiber loss.

As will be appreciated by one of skill in the art, the size and cost of a flotation stage for treating secondary fiber can be reduced by up to 75% if it is installed in centrifugal cleaner system as compared to a full scale treatment of the stock by flotation. The centrifugal cleaner system modeling indicates a 34% reduction in ink speck area of total centrifugal cleaner system accepts by removing ink specks from the first stage rejects with 80% efficiency in a flotation stage and then feeding the flotation accepts forward after centrifugal cleaning of the second stage. (24% reduction if second stage rejects are treated in a similar manner). The ability to feed the centrifugal cleaner rejects forward (after the flotation stage and additional centrifugal cleaning in the next stage) reduces the stock consistency in the first stage, thereby improving the efficiency of the first stage. The capacity of the system is also increased by feeding the second stage centrifugal cleaner accepts forward. The other centrifugal cleaner stages can also be operated more efficiently since more than 50% of the ink in the first stage centrifugal cleaner rejects has been removed in the flotation stage. When the centrifugal cleaner accepts are thickened in a press, a large amount of ink ends up in the pressate. This ink can also be removed by using the ink-laden pressate as dilution water for the centrifugal cleaner rejects going to the flotation stage.

As Mr. de Jong notes in his *Declaration*, the superior results achieved are unexpected as is seen in **Figure 7** and Tables 9-11 of the application as filed. **Figure 7 and** Tables 9-11 are reproduced below for ready reference.

FIG. 7

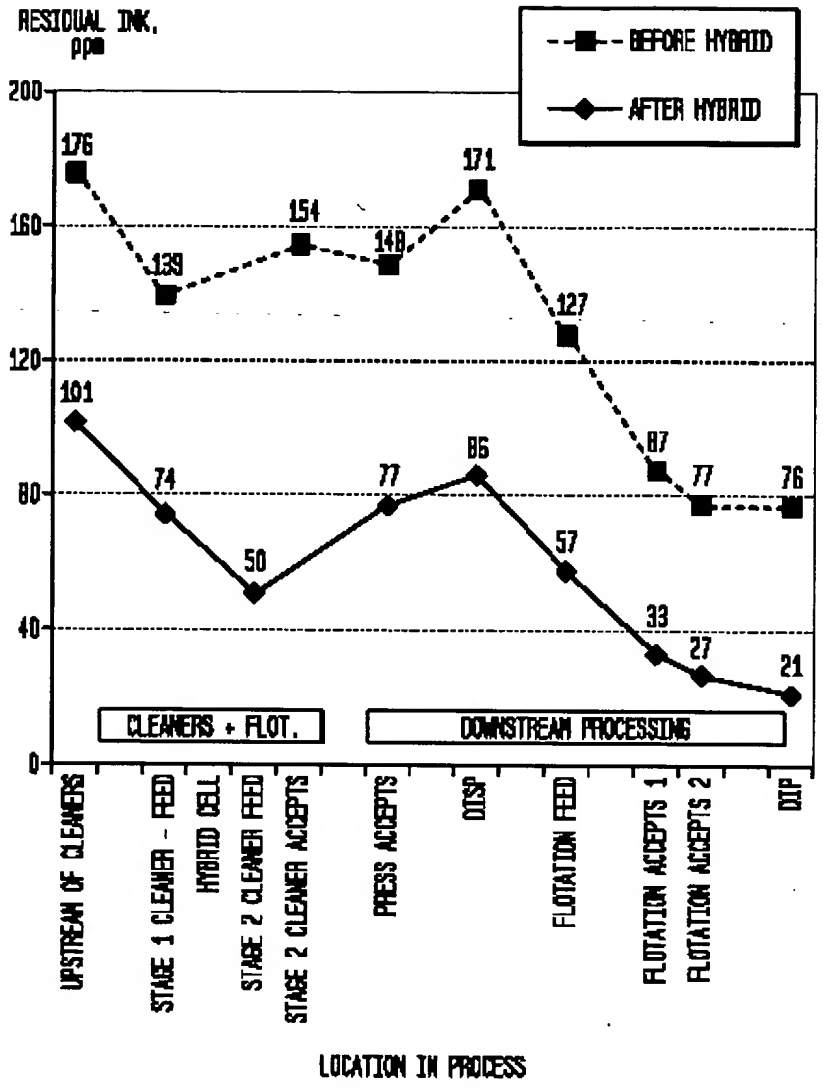


Table 9: Mid Dirt Removal Efficiency Before and After Start-up of Hybrid Cleaner – Comer Flotation Cell on a Furnish Containing 100% Mixed Office Waste (MOW)

Time Period	Mid Dirt Removal Efficiency of Dirt > 0.02 – 0.5 mm^2					
	Process	Cleaner	Comer-Cleaner	Thickener	Disperger	Disperger – DIP
Before Hybrid	96.4%	45%	53% - clnr	21%	74%	70%
After Hybrid	97.7%	50%	79%	13%	78%	73%

Table 10: Hybrid Cleaner – Flotation Cell Results Operating On 1st Stage Cleaner Rejects

Unit Operation	Feed			Brightness Gain	Dirt Removal Efficiency			Ash Removal
	Cons	Ash	Br.*		Small	MDRE	TDRE	
Comer	0.65%	2.0%	70.9%	2.0 % pts	78.8%	64.3%	71.0%	50%
St.2 Cleaner	0.58%	1.0%	72.9%	0.4 % pts	47.2%	51.2%	49.7%	10%
	Accepts							
Comer-clnr	0.49%	0.9%	73.3%	2.4 % pts	85.3%	79.1%	82.0%	53%

*Br. Is brightness of feed and accepts, MDRE is mid dirt removal efficiency and TDRE is total dirt removal efficiency.

Table 11: Comparative Stickies Removal

(Small stickies = <0.28 mm^2; Large stickies = 0.28 – 1.47 mm^2; X-Large stickies = >1.47 mm^2)

Process Location and Data Set	Pulmac Stickies (mm^2/100 grams)				Total Removal Efficiency
	Small	Large	X-Large	Total	
Data Set A					
High Density Cleaner	72	219	119	**409**	
1st Washer - out	76.9	51.3	10	**138**	1st washer -DIP = 85.3%
Disperger - in	49.1	0	0	**49**	
Deinked Pulp	20.3	0	0	**20**	**HDCl-DIP = 95.0%**
Data Set B					
1st Washer - out	64.0	13.3	0	**77**	1st washer -DIP = 91.0%
Fine Slotted Screens - out	50.8	3.1	0	**54**	
St.1 Cleaner - in	42.9	0.5	0	**43**	
St.1 Cleaner - out	36.9	2.8	0	**40**	
St.2 Cleaner - out	43.6	0	0	**44**	
Disperger - in	48.9	2.7	0	**52**	
Disperger - out	31.9	0	0	**32**	
Deinked Pulp	6.8	0	0	**7**	
Data Set C					
High Density Cleaner	102	168	37	**306**	
1st Washer - out	54.7	10.9	0	**66**	1st washer -DIP = 93.0%
Fine Slotted Screens - out	53.1	0	0	**53**	
Comer cell - Feed	48.8	0	0	**49**	Comer in-out = 62%
Comer Cell - Accepts	18.1	0.6	0	**19**	
Disperger - in	35.9	0	0	**36**	Disp. in-out = 34%
Disperger - out	21.6	0	0	**22**	
Deinked Pulp	4.6	0	0	**5**	**HDCl-DIP = 98.5%**

Note **Figure 7** shows a particularly dramatic reduction in ink content of recycle pulp processed in accordance with the invention; and that brightness, stickies content and overall dirt removal is significantly improved as is seen in the above tables. This is an unexpected result in view of the fact that only a small volume fraction of the pulp slurry

is processed by way of the invention. Certainly, *Vikio et al.* '475 makes no suggestion of the improvements observed and claimed, for example, in Claim 20 above.

The *Vikio et al.* '475 patent is directed to fractionating a rejects stream to produce a coarse fraction and a fine fraction thereof. The coarse fraction, **30, 31 (Figure 2)** is returned to the forward cleaner system after being deflaked or otherwise dispersed so that valuable fiber is not lost. That coarse function is not treated with a flotation device and in any event is preferably fed backward. *See* Col. 5, line 2 of *Vikio et al.* '475.

Nor is there disclosure that the fine fraction is necessarily fed forward. The sum and substance of the *Vikio et al.* '475 reference with respect to flotation appears at Col. 5, lines 15 and following:

> Fractionator **52** divides the slurry flow into a fine fraction stream **53** and a coarse fraction stream **56**. The fine fraction stream **53** typically contains fine contaminants and ink. For example, stream **53** preferably contains most of the ink and other fine undesirable particles introduced in conduit(s) **20**, **20'**, plus fines and small fiber particles, among other things, which are typically smaller than **100** microns. Optionally this stream may be further treated in device **54**, for example via flotation or cleaning, to further isolate the ink particles. The flotation at **54** may comprise micro-flotation or flotation in a vortex flotation system, such as a GSC® flotation system as sold by Ahlstrom Machinery. If the device **54** is a cleaning device it may be a reverse vortex cleaner, or other suitable conventional cleaner, which may include, or be without, chemical treatment of the flow is to have the ink particles as larger agglomerates as described in U.S. Pat. No. 5,587,078. Stream **53** may alternatively be sent directly to waste water treatment, or from flotation or cleaning device **54** the slurry at **55** is sent to waste water treatment. The cleaned portion (a fourth stream) of the stream **53** from device **54** may be passed in line **49** back to system **10** to any position or divided illustrated in FIG. 1.

The *Vikio et al.* '475 thus fails to disclose or suggest the invention as is further discussed below. The dependent claims even further limit the scope of independent Claim 20 and are believed most clearly allowable; especially in view of the dramatic improvements observed.

Furthermore, the "flotation" disclosed by *Vikio et al.* '475 is not ordinary flotation, rather the reference specifies micro-flotation (dissolved air flotation) or flotation in a vortex flotation system neither of which is known to be selective to hydrophobic waste such as stickies. *See Declaration of Robert de Jong*, submitted herewith. Indeed , the non-selective treatment apparently contemplated is entirely consistent with the teaching in the reference that the fines stream may be disposed of; in this regard, if the stream fines stream is cleaned at all it appears to be contemplated as diluent water to processing. Again, consistent with the teaching to discard the stream.

Even if *Vikio et al.* '475 had disclosure of selective hydrophobic removal (which it doesn't), the mere fact that *Vikio et al.* '475 could be modified is insufficient to sustain the outstanding obviousness rejections. In other words, the fact the reference contains elements which could be reconnected or rearranged is not enough. Precedent is clear on this point.

Applicant notes *In re Wright*, 122 USPQ 522, 524 (CCPA 1959) :

> **Though the court may have believed that each of the elements in the patented device was old, it does not follow that the combination was unpatentable.** We need not elaborate upon the rule that a novel combination of old elements which so cooperate with each other so as to produce a new and useful result **or a substantial increase in efficiency, is patentable.** See Lewyt Corp. v. Health-Mor, Inc., 7 Cir., 181 F.2d 855, 85 USPQ 335 , certiorari denied 340 U.S. 823, 71 S.Ct. 57, 95 L.Ed. 605, 87 USPQ 432 ; Blaw-Knox Co. v. Lain Co., 7 Cir., 230 F.2d 373, 108 USPQ 356 . Weller Manufacturing Company v. Wen Products, Inc., 7 Cir., 231 F.2d 795, 798, 109 USPQ 73, 75 (1956).

See also MPEP §2143:

> **FACT THAT THE CLAIMED INVENTION IS WITHIN THE CAPABILITIES OF ONE OF ORDINARY SKILL IN THE ART IS NOT SUFFICIENT BY ITSELF TO ESTABLISH *PRIMA FACIE* OBVIOUSNESS**
>
> A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in

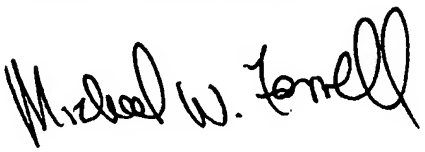
> the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cr. 2000) (Court reversed obviousness rejection involving technologically simple concept because there was no finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention); Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) (The level of skill in the art cannot be relied upon to provide the suggestion to combine references.).

MPEP §2143.01, 4th heading. None of the references, alone or in combination teach applying flotation to a centrifugal rejects stream from a first stage to produce a purified stream, returning that purified stream to a second stage of centrifugal cleaners, further processing the purified stream in the second stage to a second stage accepts stream and a second stage rejects stream and combining the second stage accepts stream with the accepts stream from the first stage. No motivation to do so appears in the references. Furthermore, the references provide not even a remote suggestion of the results achieved.

Applicant further notes no reference which even remotely suggests that stickies can be selectively removed by flotation in such a system. Accordingly, dependent Claims 28 and 40 are most clearly allowable.

For the reasons discussed above, this application is believed in condition for allowance.

Respectfully submitted,



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